# CLINICAL PROCEEDINGS

*of the*

## CHILDREN'S HOSPITAL

WASHINGTON, D. C.

*June 1954*

VOLUME X NUMBER 6

for flavor

for eye appeal

for aroma

# They're always eager for **Mulcin**

And no wonder children like Mulcin. *This* vitamin liquid for teaspoon dosage has everything they want.

The flavor is delicious real orange.

The color is a welcoming golden orange.

The aroma appeals even to the most fastidious.

Good-tasting Mulcin is free-flowing and convenient to use from mother's point of view. *And* Mulcin supplies well balanced amounts of all the vitamins *for which daily requirements have been established.* No need to refrigerate either. Its potency is assured even at room temperature.

**Each teaspoonful (5 cc.) of Mulcin supplies:**

| | |
|---|---|
| Vitamin A | 3000 units |
| Vitamin D | 1000 units |
| Ascorbic acid | 50 mg. |
| Thiamine | 1 mg. |
| Riboflavin | 1.2 mg. |
| Niacinamide | 8 mg. |

4 oz. and 16 oz. bottles.

**Mulcin** puts a smile in the vitamin spoon!

# Mulcin

MEAD

**MEAD JOHNSON & COMPANY**
**Evansville, Indiana, U.S.A.**

MEAD, JOHNSON & COMPANY, Suite 419 Eig Building, 8641 Coleville Road, Silver Spri
Maryland. JU 9-1222

# CLINICAL PROCEEDINGS

## OF THE CHILDREN'S HOSPITAL

13th and W Streets, Washington 9, D. C.

Vol. X *June 1954* No. 6

CONTENTS





PUBLISHED MONTHLY BY THE STAFF AND RESEARCH FOUNDATION OF THE CHILDREN'S HOSPITAL, WASHINGTON, D. C.

Cases are selected from the weekly conferences held each Sunday morning at 11:00 A.M., from the Clinico-pathological conferences held every other Tuesday afternoon at 1:00 P.M., and from the monthly Staff meeting.

This bulletin is printed for the benefit of the present and former members of the Attending and Resident Staffs, and the clinical clerks of Georgetown and George Washington Universities.

Subscription rate is $2.00 per year. Those interested make checks payable to "Clinical Proceedings Dept.," The Children's Hospital, Washington, D. C. Please notify on change of address.



Entered as second class matter November 21, 1946 at the post office at Washington, D. C., under the Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in Section 538, Act of February 28, 1925, authorized January 17, 1947.

# CHILDHOOD APHASIA

Jean D. Lockhart, M.D.

D. L. (47–1624), a colored female, was first referred to this hospital at the age of six months because of a squint. She is now 7½ years old, and is being followed by the Neurology and Psychiatry Departments.

Past History: She was born at Gallinger Municipal Hospital, in August, 1946, to a 32-year old gravida iv, after a normal full-term pregnancy and what is described as a "difficult labor", the mother being asleep at the time of delivery. Birth weight was 6½ pounds. No oxygen was needed for resuscitation. She was apparently normal at birth, was breast fed, and nursed well until six months, when she was weaned to a cup. The three other siblings are healthy and do well at school.

Convergent squint (alternating) was said to have been noted since birth. When the girl was about two or three months old, and her mother would stop by the crib and talk to her, the baby used to respond, but turned *away* from the mother in trying to find the voice.

Motor development was within normal limits; her first tooth appeared at six months, she sat at seven months, walked before twelve months, and was completely toilet trained at three years. She began to talk at 18 months, but speech was never clear. When she started to hold picture books, she always held them upside down, even if they were passed to her upright. Although she is now repeating first grade, she cannot read, count or identify pictures or colors. From the time she was a toddler, she had "vomiting spells"; starting at age three or four she had intermittent "shaking spells", and at age seven she had her first grand mal seizure. There is no history of head trauma. Her behavior is described as unpredictable; she is "high tempered" and occasionally "mean".

Family History: With each of her pregnancies, patient's mother was given "needles for her blood". In 1953, her serology was rechecked and found negative; spinal fluid was also normal.

Patient's father is an alcoholic, who has been hospitalized for DT's. In 1952, his serology was negative. He has hypertension and epilepsy. He is separated from the patient's mother.

Medical Findings: In 1947 the ophthalmologist reported normal fundi and normal vision. (All subsequent eye examinations were normal, except for poor convergence. However, mother continued to complain of the patient's vision, saying she could not find a penny on the floor even when pointed out to her, and could not judge distance.)

In May, 1953, patient's electroencephalogram was read as abnormal; diffuse; predominately left temporo-parietal focus. At that time her serology was negative; x-rays of the skull were negative; x-rays of the lumbar spine revealed spina bifida of the fifth lumbar vertebrae and the first segment of the sacrum. In December, 1953, repeat electroencephalogram showed abnormality of marked degree; diffuse; left temporo-parietal and right occipital focus. Patient is now being maintained on anti-convulsive drugs.

Psychological Findings: Patient was tested in July, 1953, and again in December. In July, the psychologist (Miss Henriette Woolf) got a verbal I.Q. of 48–58; a non-verbal I.Q. of 37, and a total I.Q. of 41–47. However, it was thought that she had much more capacity than she was able to utilize, since there was good comprehension and reasoning. After repeat testing in December, I.Q. was re-estimated at a possible 59, but it was still the impression of the tester that the patient had greater capacities than she was able to utilize or demonstrate.

Psychiatric Observation: This patient is a pretty and very active seven-year old colored girl, who was happy to come into the playroom, and enjoyed all the objects she felt or touched. She is definitely right-handed. She had little or no visual appreciation, although she did not bump into objects. It was difficult to explain the feeling she gave of not seeing properly.

She called a Teddy-Bear a doll, although later she used the word Teddy-Bear. When asked to point out the Teddy's eyes, nose and mouth, she did so correctly. However, when asked for his ears, she finally felt her own, and could not find them on the Teddy. When asked to show her right hand, she did so, also her right foot, but she pointed to her left eye, instead of the right. On a second trial, she gave the wrong hand.

In a feeding situation, with the doll-house family, she fed the mother first. This mother doll was broken in half, and she could not seem to find the father doll in order to feed him, although he was on the table with the others; she found instead the lower half of the mother doll and said, "Here's the Daddy". She was not able to identify colors, but she knew a green crayon to be the same color as a green candy. Given a comic book, she held it either up or down, and pretended to read. She could not really identify anything in it, except possibly a very large figure of a man. On counting, she went from 1 to 9, and then jumped around. She took a red crayon and drew a large cross on the drawing board. She called this a "a car sign . . . or a chair . . . airplane it look like now".

A partial summary of the Psychiatric Staff conference on this patient reads: "We have the picture here of a child who is severely damaged organically with a number of different types of aphasia involved. This affects at least her hearing, visual and spatial relationships. These are all a part of a pattern of organic brain damage of unknown etiology. That it is possibly congenital is suspected on the basis of the epileptic family history and the convulsive tendency in the child herself. It would seem that those aphasias involving visual functioning, hearing and spatial discrimination are compensated for in many ways by the child's utilization of her intact senses, particularly tactile, and by her ability to comprehend fairly well, as evidenced by her psychometric pattern. However, it is our feeling that she understands what is going around her only approximately, leans considerably on other people and has therefore developed patterns of relationships that will make her acceptable to others."

## DISCUSSION

William H. Hart, M.D.*

The skills of reading, writing, arithmetical calculation, and auditory appreciation of oral communication depend upon highly complex and closely integrated patterns of neural activity. Appreciation of the printed word, for example, sets off a train of complex associated events in the higher cerebral centers in which the word is related to other words, a concrete mental picture is obtained of the thing represented, an appreciation of its

* Clinical Associate Professor of Ophthalmology, Georgetown University; Research Consultant, National Institutes of Health.

auditory value is called forth, and the muscles of speech are activated for expression of the symbol.

It is obvious that wide areas of the brain must be involved in such a complex process, and that a large proportion of the events by facilitation of certain pathways. It is the automatic character of these basic patterns of response or "sets", referred to by Granich, which enable us to obtain speed and facility in reading, speaking, and writing.

Injury or interference in any one of numerous areas of the brain may be expected to impair the functional behavior of the complex associational events concerned with appreciation of auditory and visual stimuli, and the expression of mental associations called forth by these stimuli. It is not surprising, therefore, that one never sees a loss of individual parts of speech, but a depression or reduction of the speech function. Depending upon the site of interference, the resultant disability may be dominated by sensory or motor dysfunction.

Following the early work of Broca in 1865 which localized the motor speech area in the lower and posterior part of the left frontal lobe, attempts were made to pinpoint each function of speech in a separate spot of the brain anatomy, even to the point of localizing each word and phrase. Head refers to the English and German schools engaged in this work as the "map-makers." Although this work is now regarded as extreme, we are able to point to certain portions of the brain as subserving definite functions.

Broca's area is well accepted as a dominant point for the control of the motor aspects of speech, destruction of which leads to motor vocal aphasia without paralysis of the muscles associated with speech. Nearby this center, and in the motor strip, is an area, the destruction of which results in paralysis of the muscles associated with speech.

The visual associational area is located in the occipital pole adjacent to the calcerine cortex. Destruction of this area leads to alexia (inability to read and write).

The auditory speech area is located in the posterior part of the superior convolution of the temporal lobe. Destruction of this area leads to complete sensory aphasia (inability to understand or employ spoken or written language).

In general then, we may say that a posteriorly placed lesion disturbs the comprehension of speech more than its expression (sensory aphasia) while an anteriorly placed lesion produces the reverse situation (motor aphasia).

The literature on aphasia is large and complicated, and an unwieldy vocabulary has served to set off a number of controversies which are largely semantic in character. It is sufficient to realize, however, that the

complex functional patterns of speech may be harmed at many different points so as to result in highly diverse combinations of aphasic symptomatology; and it is even more important to realize the capacity of the brain to compensate and recover from such injury. Every case of aphasia has the possibility for some degree of successful retraining. Therefore, in doubtful cases, the erroneous diagnosis of aphasia is much to be preferred to a diagnosis of mental incompetence, since the latter classification connotes a degree of finality that removes all hope. It is most gratifying that the diagnosis of aphasia in children is now being made more commonly and that an increasing number of children have been removed from the group of mental deficiency. Speech therapists and pediatricians are much to be congratulated for the great strides which have been made in this field.

## PURPURA FULMINANS

### Report of a Case Coincident with Varicella

John P. McGovern, M. D.
Jean P. Dawson, M. D.

Purpura fulminans, a rare symptom-complex which was first described by Guelliot[1] in 1884, is characterized by the sudden appearance and rapid spread of symmetrical cutaneous and subcutaneous ecchymoses, fever of variable degree, marked systemic symptoms, and death usually within a few days after the onset.

The syndrome most commonly appears after a latent period of a few days or weeks following scarlet fever. It may, however, follow other exanthematous febrile diseases, but also has been reported with no predisposing cause. The ecchymotic areas usually involve the extensor surfaces of the extremities with a somewhat symmetrical distribution. These hemorrhagic areas usually are well circumscribed, tend to develop sero-sanguinous bulbae and necrosis, and extend rapidly. The affected extremities are often edematous. Characteristically intense pain develops in the extremities and abdomen and within a few hours to several days the patient exhibits a shock-like pattern, which in spite of transfusions and other therapeutic measures, is usually followed by death.

#### CASE REPORT

An 11 year old white female was admitted to the Children's Hospital on March 22, 1953. Six days before admission she contracted chicken pox with a typical vesicular rash and mild fever. She appeared relatively well, when an ecchymotic area was noted on the right thigh. This lesion spread rapidly so as to involve most of the right thigh, which became very painful. One day before admission a similar area appeared on the right calf. (Figure 1)

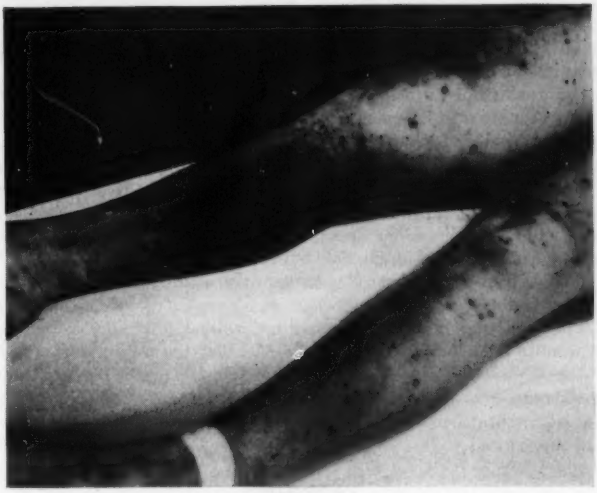

FIG. 1

The child's past history revealed that she had had mumps and measles and had undergone an appendectomy. There was no past history of a bleeding tendency.

The family history revealed that a grandfather had been a diabetic and one uncle had tuberculosis. Two siblings also had uncomplicated chicken pox at the time. Platelet counts on the parents and siblings were within normal limits.

Physical examination revealed a large, well-developed, pre-adolescent white female lying uncomfortably and with some distress on her left side. The temperature was 99.2°F; pulse 88, and respirations 22 per minute. The entire body was covered with drying vesicles, many with a hemorrhagic base. A large indurated, tender, purplish-black ecchymotic area involved the major portion of the right thigh anteriorly and a similar area extended over the right calf. Several bullae, containing sero-sanguinous fluid, ranging from approximately 0.5 cm. x 1.0 cm., were present over the ecchymotic area. They could not be moved by light pressure. Several vesicles were seen on the palate and the throat was moderately infected. A few small lymph nodes were palpable in the posterior cervical triangle. The breath sounds were decreased and slight dullness to percussion was elicited over the right chest. Examination of the abdomen was normal except for the presence of an old appendectomy scar. Neurological examination revealed no abnormalities.

A complete blood count revealed a hematocrit of 40 per cent, 12.1 grams of hemoglobin, 3,900,000 red blood cells, 27,000 leukocytes with a differential count of 50 per cent segmented cells, 22 per cent band forms, 12 per cent juvenile forms, 15 per cent lymphocytes and 1 per cent monocytes. Platelets were less than 10,000. The clotting time (Lee-White method) was 12 minutes, bleeding time 5 minutes and no clot retraction was observed within 24 hours. The prothrombin time was 33 seconds as compared to a control of 14 seconds (14 per cent of normal). Blood cultures were negative. Urinalysis revealed a yellow, acid urine with a specific gravity of 1.035, 20mg./100ml. of albumin, no sugar, a four plus acetone and one plus diacetic acid. A rare red blood cell, 2-3 white blood cells and a few granular casts were noted in the microscopic examination of a centrifuged specimen.

50 mg. of Hykinone and 600,000 units of procaine penicillin were administered intramuscularly on admission and the same dose of Hykinone was repeated in 4 hours. Codeine and phenobarbital were given for pain and restlessness. In spite of medication the patient continued to complain of severe pain in the ecchymotic area, which gradually increased in size. She also complained of abdominal pain and vomited several times approximately 12 hours after admission. She was seen by a surgical consultant, who was of the opinion that he had no procedure of value to offer at this time. Eighteen hours after admission her pulse was unobtainable, the blood pressure had dropped to 50/0 and she appeared to be in shock. The hematomata on the right leg had increased in size and similar areas were appearing on the left thigh and both buttocks. (See Fig. 1) 100 ml. of slightly hypotonic saline and 600 ml. of whole blood were given at this time but her systolic blood pressure remained below 62 mm. Twenty hours after admission 75 mgms. of cortisone was given intramuscularly and repeated every six hours. It was noted that she had not voided since the twelfth hour after admission despite an adequate fluid intake. A Foley indwelling catheter was then inserted with the withdrawal of only 25 ml. of cloudy urine. She continued to be anuric for the remainder of her illness, her blood urea nitrogen rising to 34 mg. Thirty hours after admission her blood pressure was unobtainable, her pulse became irregular and she expired.

## PATHOLOGY

At autopsy the skin was covered with hemorrhagic varicelliform lesions in different stages of development. The entire surface of the right thigh and calf, both buttocks, and, to a lesser extent, the left leg were covered with bluish-black tense ecchymotic areas. Dissection of the right popliteal region revealed massive hemorrhage within the subcutaneous tissue and a milder degree of hemorrhage within the muscle itself; the popliteal vessels were normal. Microscopic examination of the skin showed a few areas of destruction of the epidermis and dermis and infiltration of the subcutaneous tissue with red blood cells.

All the organs examined were found to be congested. Hemorrhagic areas were present in the lungs, bladder, uterus, the paraventricular regions of the white matter of the brain and the dentate nucleus of the cerebellum. There was no free blood in the body cavities. Both ovaries were deeply red and grossly hemorrhagic. Except for slight congestion of the capillary vessels, the adrenal glands were normal.

It is important to note that no evidence of vasculitis or platelet thrombi could be found in the ovary sections. The liver weighed 1000 Gms. (normal 852 Gms.) and was of a reddish-yellow color with scattered greenish-yellow areas. Microscopic examination showed the hepatic lobules to have lost their normal architecture. Focal necrosis, occurring mostly around the central vein, was present and the hepatic cells showed degeneration and fatty infiltration.

Both kidneys were soft and flabby and their surfaces were covered with pinpoint hemorrhages. There were no gross abnormalities of the architecture of the calices. Microscopically, there was slight proliferation of the glomerular endothelium, extensive necrosis of the proximal portion of the secretory tubules and infiltration of the interstitial tissue with red blood cells.

## DISCUSSION

Recovery from purpura fulminans is unusual. In over 100 reported cases only 8 survivals are recorded: one following exchange transfusion;[2] two that were attributed to methionine therapy;[3] one after the amputation of

both involved extremities and the administration of fibrinogen;[4] two as the apparent result of large transfusions.[7, 8] Several investigators[4, 9] have recently commented on the possible effectiveness of ACTH or cortisone, but until the present case the frequency of its use could not be determined. The immediate administration of vitamin K, with whole blood transfusion and cortisone within the first eighteen hours of admission to the hospital proved to be of no benefit to our patient. It should be recalled, however, that although the duration of this disease process was only two days before we first observed the patient, death occurred on the third. This is consistent with the characteristically fulminating course of the reported cases. Whether or not the therapeutic regime, which was used, would have been effective earlier in the disease is highly speculative. It is also unlikely that we would have appreciated the true significance of this symptom-complex until the course was nearly run. One is obviously unable to critically evaluate the role of cortisone in conjunction with vitamin K and transfusion in this patient.

Numerous theories have been presented in an attempt to explain the etiology of purpura fulminans. Extreme hypersensitivity to an "allergen" with tissue damage resulting from an extensive antigen-antibody interaction has been suggested.[10] In cases following scarlet fever, sensitization of the capillary endothelium by the streptococcus toxin is generally accepted.[11] Heal and Kent[4] suggest that intravascular platelet agglutinization has occurred which is consistent with the finding of thrombocytopenia. With respect to these theories it is interesting to note that histologically our case demonstrated neither localized nor generalized vasculitis or platelet thrombi. The complexity of this problem is further illustrated by the findings of factor V deficiency[2] and fibrinopenia[7, 12, 4, 8] in cases of purpura fulminans. Generally there has been an absence of any consistent histiological findings. This disease still remains somewhat of an enigma, with the possibility of multiple etiological factors, the presence of a specific treatment is unknown, and general therapeutic measures are of doubtful value. Probably the treatment of choice at present would be exchange transfusion very early in the disease, to be repeated at a somewhat later date. The administration of vitamin K and cortisone might well be tried.

SUMMARY

A fatal case of purpura fulminans with onset during the fourth day of varicella is presented. Treatment consisted of blood transfusion, vitamin K and cortisone without a satisfactory response.

BIBLIOGRAPHY

GUELLIOT, A.: Note sur frois cos de purpura infecticus foudroyant. Union méd et scient. du nord-est **8**: 25–37, 1884

DICK, G. F., MILLER, E.M., AND EDMONDSON, H.: Severe purpura with gangrene of lower extremity following scarlet fever: recovery after amputation, Am. J. Dis. Child **47:** 374–377, 1934

WEBB, B. D., DUBS, E. J., AND CONRAD, E.: Postscarlatinal gangrene with prolonged prothrombrin time. J. Pediat. **30:** 76–81, 1947

GASSER, C. AND DE MURALT, G.: Helv. paed. Acta, **5:** 364, 1950

KAUFMAN, B.: Arch. Pediot., **63:** 282, 1946

HEAL, F. C., AND KENT, G.: Canadian Med. Assoc. J., **69:** 367, 1953

KNAVER, H.: Jb. Kinderheilk, **118:** 1, 1928

DRYGGVE, H.: Acta med. Scandinav., **127:** 382, 1947

CHAMBERS, W. N., HOLYOKE, J. B., AND WILSON, R. F.: New Eng. J. of Med., **247:** 933, 1952

GLONZMANN, E.: Jb. Kinderheilk, **83:** 271, 1916

KRACKE, R. R.: Diseases of the Blood, Second edition, Philadelphia: Lippincott, 1941. p. 460

BRUEHL, H.: Zeitschr-f. Kinderheilk, **50:** 547, 1931

## HYPOPROTEINEMIA

Dr. Anthony DeSpirito

Recently we observed a patient with idiopathic hypoproteinemia at Children's Hospital. The case history of this patient and a brief review of the literature follow.

### CASE REPORT

A. C., a 3 year old colored female was admitted on January 4, 1954. She was perfectly well until eight days prior to admission when her mother noted "swelling of the abdomen". The abdomen gradually became more distended until four days prior to admission at which time she was brought to the Out Patient Department. At that time she was afebrile. Physical examination was essentially negative and the patient returned home for observation. In the four days preceding admission her parents noted a continued, gradual increase in abdominal size and swelling of the eyes and ankles. The child experienced several epidoses of enuresis which was extremely unusual. She had mild anorexia but no vomiting, diarrhea or preceding upper respiratory infection.

Family history and past history were essentially normal. Birth weight was 6′11″ following a normal pregnancy and labor. She was bottle fed up to 9 months of age and vegetables and cereal were started at 5 months. She has taken solid foods well since one year of age. She has been on vitamin concentrate since the first 2 months of life. The child has received routine immunization procedures. The mother was 29, alive and in good health. The father was 32, and in good health. Patient had a 6 year old brother in good health. No familial diseases were discovered.

Physical Examination: A well-developed, well-nourished child with obvious abdominal distension and swelling of the lower legs. She was alert, cooperative and did not otherwise appear acutely ill. Pulse rate was 80/min., blood pressure: 90/50 Temperature: 99.4°F., weight: 36′.

Examination of the head and neck was negative. There was no peri-orbital edema

TABLE 1

| | 1/5 | 1/8 | 1/11 | 1/15 | 1/28 |
|---|---|---|---|---|---|
| Total protein | 4.1 | 4.1 | 4.3 | 6.1 | 7.0 |
| Albumin | 2.9 | 2.8 | 2.9 | 4.0 | 5.0 |
| Globulin | 1.2 | 1.3 | 1.4 | 2.1 | 2.0 |
| Ratio | 2.4/1 | 2.1/1 | 2.0/1 | 1.9/1 | 2.5/1 |

present and fundoscopic examination was normal. The nose and throat were normal. The lungs were clear. Examination of the heart revealed a normal sinus rhythm with no murmurs. The abdomen was distended with shifting dullness and a fluid wave was present. The liver, kidney and spleen were not palpable. The labia majora were markedly edematous. The genitalia were otherwise normal. There was a 2 plus pretibial, ankle and foot edema.

Course: The following morning edema of the upper eye lids was noted. The child was otherwise alert, and comfortable. The edema of the eyelids and vulva disappeared in 48 hours. After five days hospitalization the abdomen continued distended but neither a fluid wave nor shifting dullness could be elicited. Pre-tibial edema subsided gradually and was completely gone in ten days. At that time all abdominal distension had disappeared. The patient lost five pounds during her hospital stay and was discharged on January 16, 1954, twelve days after admission, completely free of edema.

The laboratory results were as follows: the hemoglobin ranged from 13–14 gms. on several determinations, with a 44% hematocrit. The white blood counts and differentials were within normal range. The sed rate was 7 mm. per hour. The eosinophile count was 280 per cu. mm. At no time was an abnormal amount of eosinophils reported on the differential white blood count. There was no sickling. The urinalyses were repeated daily and were essentially normal on all occasions, specifically abnormal cells and albumin were never found.

The total protein and A/g ratio determinations are listed in Table 1. The thymol turbidity was 1 unit, cephalin flocculation 1 plus, the BUN 15 mgm. per cent, FBS: 70 mgm. per cent. The serology was negative, several stools for ova and parasites negative. The IVP and G-I series were within normal limits. PPD was negative.

Total protein and A/G ratios on the mother and father were normal.

## DISCUSSION

On admission the patient presented a diagnostic problem. As causes of such edema, excessive stool and urinary loss of protein, hepatic disease and allergy were considered. As a result acute glomerulonephritis, nephrosis, parasitic infestation, and starvation were ruled out by the history and laboratory studies.

Thompson and McQuarie[2] first reported a child with idiopathic hypoproteinemia. This patient had symmetrical reduction in albumin and globulin components. The child succumbed to bronchopneumonia complicating surgery for otitis media and mastoiditis. At autopsy the liver demonstrated atrophy of the hepatic cords. This case report was followed by a number of reports in adults with idiopathic hyproproteinemia who eventually recovered.[3, 4, 5] Schick and Greenbaum[6] reported a case similar

to that of McQuarie, the child was peculiarly free of infection despite an almost total absence of gamma globulin until a fatal infection intervened at which time she succumbed to otitis media and bronchopneumonia. At autopsy, the liver also demonstrated atrophy of the hepatic cords.

Wyngaardnern[7] reported a similar case of complete hypoproteinemia in which eosinophilia was thought to be a part of the clinical picture. But the child later was treated as an asthmatic which might have accounted for the rise in eosinophils. Rytand[8] had previously reported eosinophilia in an adult who had hypoproteinemia.

Liver function tests were essentially normal yet the pathology demonstrated in the cases of McQuarie and Schick would indicate the presence of at least some hepatic dysfunction at the time of the primary episode. It has been shown that the liver[9] is of primary importance in the formation of plasma proteins as are the spleen, blood forming organs and perhaps the intestinal mucosa. This might lead us to conclude that in this disease, now diagnosed as idiopathic hypoproteinemia, the primary pathology is in the liver despite the presence of normal liver function tests.

SUMMARY

A 3 year old colored female with a history of and laboratory results compatible with the diagnosis of idiopathic hypoproteinemia is presented. Available evidence would indicate this disease is a result of temporary dysfunction of the liver.

BIBLIOGRAPHY

1. Cantarow, A. and Trumper, M.: Clinical Biochemistry, 4th ed., W. B. Saunders Co., Philadelphia, 1949.
2. Thompson, W. H., McQuarie, I. and Bell, E. T.: Edema associated with hypoproteinemia of serum proteins & atrophic changes in the liver, J. of Ped., **9**: 604–619, 1936.
3. Binger, M. W., and Keith, N. M.: General edema of indeterminate etiology, Proc. Central Soc. Clin. Research, J. A. M. A., **108**: 588, 1937.
4. Cope, C. L. and Goadby, H. K.: Study of a case of idiopathic hypoproteinemia, Lancet, **1**: 1038, 1935.
5. Johansen, A. H.: Hypoproteinemia, Acta path. & microbiologicas, Scandenav., 1938, Supp. 37, p. 271–289.
6. Schick, B., and Greenbaum, J. W.: Edema and hypoproteinemia due to congenital defect in protein formation, J. Ped. **27**: 241, 1945.
7. Wyngaardern, J. B., Crawford, J. D., Chamberlin, H. R. and Lever, W. F.: Idiopathic hypoproteinemia, Ped. **9**: 729–735, August, 1952.
8. Rytand, D. A.: Edema with unexplained hypoproteinemia; Archives of Internal Medicine, **69**: 251–262, 1942.
9. Nadden, S. C. and Whipple, G. H.: Plasma protein, Physiological Rev., **20**: 194–211, 1940.

# CLINICAL PATHOLOGICAL CONFERENCE

Monday, March 15, 1954

Directed By: E. Clarence Rice, M.D.

Assisted by: W. Luther Hall, M.D.

By Invitation: Maynard Cohen, M.D.

This nine year old colored boy was admitted to the hospital with a two day history of epigastric pain. The pain was described as being sudden in onset, constant and prevented him from lying flat in bed. There was anorexia but no associated anorexia, nausea, vomiting or diarrhea. He had had a sore throat with a moderate cough for several days prior to admission. Shortly before the onset of the present illness he had injured his right knee while playing basketball and the knee had continued to be mildly painful.

He had had frequent colds but no other illnesses. The parents and four siblings were well and the family history was non-contributory.

Physical examination revealed a well developed, well nourished, acutely ill boy. He was toxic, listless and slightly acidotic. His temperature was 103.2° F. and his pulse 110 per minute. There was a dried exudate in the nares and the tonsils were enlarged and inflammed. Both lungs were clear and resonant. The heart was of normal size, the rhythm was regular and there were no murmurs. The abdomen was flat with marked, generalized voluntary rigidity. There was slight tenderness in the epigastrium without evidence of rebound. There was minimal cervical, axillary and inguinal lymphadenopathy.

The red blood cell count was 2,000,000/cu. mm. with 7 grams per cent hemoglobin. The white blood cell count was 33,400 with 80% polymorphonuclears, 10% bands and 10% lymphocytes. The icterus index was 7.5 units and two sickling preparations were negative. Sedimentation rate was 40 mm./hr. Urinalysis revealed a specific gravity of 1.029, a few white cells and finely granular and hyaline casts. Spinal fluid examination was entirely normal. An x-ray of the chest revealed the heart to be of normal size but of abnormal contour. A bronchitic condition in the parenchyma was suggested. A flat plate of the abdomen revealed only moderate hepatomegaly.

The three day pre-operative course was as follows:

The temperature ranged from 101° to 103° F. and the pulse from 100 to 140. An enema on admission produced brown liquid returns, followed by four liquid stools. During this period he vomited food or clear mucus three times. Five grains of aspirin every four hours for temperatures of 100.0° were administered on the first day. This was discontinued on the second day and sulfadiazine substituted without clinical response. The dehydration and acidosis were easily corrected and a urinalysis on the third day revealed a specific gravity of 1.016, 5 mgm. of albumin and a few white blood cells. Abdominal pain remained the chief complaint, and it became severe, colicky and intermittent. Peristalsis was visible. The maximal tenderness shifted to the right lower quadrant.

On the third day of hospitalization an appendectomy was performed. The patient expired at 5:30 p. m. just forty-five minutes after the operative procedure was begun.

An autopsy was performed.

DISCUSSION

Maynard Cohen, M.D.

I frankly find this a puzzling case without a ready explanation of all of the findings. On reviewing the case history, I am most impressed with the following points:

1) Severe epigastric pain
2) Recent respiratory infection and
3) Recent trauma
4) Signs of acute illness pointing sharply to the abdomen with apparently normal lungs, questionably normal heart and normal spinal fluid
5) Evidence of massive hemorrhage, without any indication of loss of blood by vomiting or stool
6) The persistance of symptoms and
7) The decision to perform an appendectomy shortly after which the patient died. I presume death occured due to his underlying illness, rather than the operation or complications of anesthesia.

I feel that the most likely explanations of this patient's medical dilemma are those which would cause sudden severe abdominal pain, followed by vomiting and evidence of acute toxemia, such as resulting from malrotation of the intestine with volvulus, or a herniation of the gut into the foramen of Winslow—leading to traperitoneal hemorrhage, peritoneal inflammation with drainage of peritoneal contents into the right lower quadrant leading to localization of findings there and the assumption of appendicitis. Certainly a volvulus can cause immediate severe pain. Unfortunately I feel that this condition would have suggested itself strongly at the time, at least by the presence of a suggestive mass, so I have considered other possibilities.

Renal and vesicle colic could cause excruciating and intermittent pain, but not epigastric pain, hemorrhage or a fatal outcome.

Mesenteric lymphadenitis, following the respiratory infection, would probably not have been as diffuse in its distribution of pain.

Acute peritonitis, unrelated to some other abdominal catastrophe, would not lead to intermittent colicky pain.

Rupture of the liver or spleen would cause pain, toxicity, blood loss and peritoneal vivitation, but would presuppose a severe abdominal trauma, which was not clearly indicated as associated with his knee injury.

Intussusception would have led to bloody stools.

Duodenal ulcer would have led to blood in vomitus or stool.

Lead poisoning or poisoning with some other toxic agent severe enough to cause abdominal pain, I feel, would have led to other neurological signs.

Acute pancreatitis can occur from infection or an embolus, and possibly

have come from the knee injury or acute tonsilitis, leading to severe constant epigastric pain, with localized bleeding, peritoneal irritation, and death.

I am obliged to say that a volvulus is my first choice and acute pancreatitis is a strong possibility.

Student: Are you impressed by the size of the liver?

Dr. Cohen: No.

Student: How about the abnormal contour of the heart? Don't you think that is significant?

Dr. Cohen: The blood loss and the replacement of the fluid probably has something to do with this and then there is the possibility of pericarditis.

Student: Do you feel that you could rule out the effects of anemia?

Dr. Cohen: I do not believe that this patient's illness was connected with a hemolytic anemia.

Student: Does not one see mesenteric lymphadenitis along with tonsillitis?

Dr. Cohen: Yes. Frequently it is difficult to make a diagnosis in such a case and of course a number of patients are operated on for appendicitis when it is not present. I am of the opinion that this child had either a volvulus or an acute pancreatitis.

Joseph M. LoPresti, M.D.: I believe that the abdominal pain may have been associated with rheumatic fever and that we should have had a trial with salicylates in helping to determine whether or not we were dealing with rheumatic fever. Approximately one-third of children with acute rheumatic fever have abdominal pain as the presenting or outstanding manifestation. This pain may simulate exactly an acute surgical abdomen. The abdominal pain associated with rheumatic fever responds dramatically to salicylates. It seems quite possible to me that we are dealing with a case of rheumatic fever or possibly appendicitis or even a ruptured appendix.

### PATHOLOGICAL DISCUSSION

W. Luther Hall, M.D.: The diagnoses submitted by the students and residents are as follows: appendiceal abscess, subacute bacterial endocarditis, rheumatic fever, miliary or hematogenous tuberculosis, poisoning, osteomyelitis secondary to knee injury, mumps, pancreatitis and mesenteric thrombosis. I will now give the important necropsy findings.

### NECROPSY FINDINGS

The skin showed marked evidence of pallor and there was a recently sutured right rectus incision of the abdominal wall. There were no adhesions involving the pleural cavities and no fluid was present. The pericardial sac was free of adhesions and 25 millimeters of clear straw colored

fluid was obtained. The peritoneal cavity was also free of adhesions and it contained 75 milliliters of clear straw colored fluid. The lungs showed nothing but congestion of the posterior portions and microscopically there was evidence of a beginning interstitial pneumonia. The abdominal viscera were congested. The liver extended 8.5 cm. below the costal margin in the mid-clavicular line. The liver was somewhat mottled as well as being injected. After the blood was drained from it, the tissue became pinkish yellow, previously having been reddish brown. Microscopic examination revealed chronic passive congestion and fatty metamorphosis. The spleen measured 10 by 8 cm. and weighed 100 grams as against a normal of 73 grams. It was smooth and deep purple in color showing marked evidence of congestion. The kidneys were considerably oversized and weighed 130 and 135 grams respectively, the normals being 82 and 83 grams. They showed evidence of chronic passive congestion. The gastrointestinal tract was moderately congested and Peyer's patches in the ileum were prominent. All of the lymph nodes of the body were enlarged and hyperplastic. The findings of importance were in the heart, which was considerably enlarged, especially the right auricle and ventricle, there being some hypertrophy of the left ventricle. It measured 12.5 by 7 cm. and extended 5.5 cm. to the right of the midline. It weighed 250 grams, the normal being 126 grams. The ductus arteriosus and foramen ovale were closed. In examination of the valves it was found that along the edges of the leaflets of the mitral valves there were tiny warty vegetations which were red in color and firmly attached to the valve surface. The middle cusp of the aortic valve had a small area which was similarly involved. The myocardium was deep red in color. Microscopic examination of the myocardium showed all variations from normal heart muscle to areas of marked degeneration including necrosis and extensive inflammatory reaction. No Aschoff bodies were found, however. The gross and microscopic findings are compatible with those seen in rheumatic fever.

The pathological diagnosis was:

1. Acute rheumatic heart disease
   a) Acute dilatation of the right heart
   b) Mitral and aortic valvulitis
   c) Acute myocarditis
2. Early interstitial pneumonia
3. Fatty metamorphosis of the liver and chronic passive congestion
4. Congestion of the abdominal viscera
5. Post-appendectomy, recent

E. Clarence Rice, M.D.: This case brings out in a very practical way one of the problems which confront the physician and surgeon who are called upon to see a child who is having a respiratory infection and what is called

"an acute abdomen." The student and Dr. Cohen have brought out the fact that abdominal pain and tonsillitis are sometimes seen together and that appendices are removed where appendicitis is not present. In this case the boy was observed for over 24 hours and the pediatrician had to make a decision on the basis of the abdominal pain, leucocytosis, and fever which the child had. As I recall it, the pediatrician realized that he was probably dealing with a medical problem but he felt that he could not deny the child surgery which he seemed to need and this opinion was confirmed by the surgeon. In addition to rheumatic fever, one of the causes of abdominal pain in children, which can be confused with the acute abdomen and appendicitis, is the crisis of sickle cell anemia which may well give the same picture. One should also remember that severe acidosis, particularly when dealing with unrecognized diabetes mellitus, may give a stiff abdomen which is rather generally tender and without much localization. Most of these patients should have sufficient work done and be seen by a surgeon who is well trained medically and will not operate until he knows that he has all of the facts at hand before making his decision.

In this child's case it is possible that the abdominal pain was due to the involvement of the blood vessels of the peritoneum or even of the appendix. This illness occurred over ten years ago. It is possible that had it happened today, and EKG might have been done to determine if there were any changes characteristic of rheumatic fever, such as lengthening of the PR interval and so forth. In any event the physician called to see such a patient has to make up his mind whether or not he is dealing with a surgical problem as well as a medical one. If he feels the patient has an abdominal condition which may merit surgery, whether or not the patient will be able to withstand surgical intervention. There is certainly no reason why a child with rheumatic fever and carditis could not develop appendicitis and require an operation. Whether or not his cardiac condition would allow him to survive the operation is another thing. As evidence of this dilemma, we find that a number of the appendices which are removed showed no evidences of disease. This would indicate that the pediatrician and the surgeon believe that there are times when it is safer to go in and operate, removing the appendix rather than run the risk of difficulties which might arise had they not decided upon operative intervention.

ON EVERY COUNT

# Superior

## VITAMIN SUPPLEMENTS FOR INFANT

**Superior flavor** Exceptionally pleasa
"taste-tested" blend of flavors carefully protected during manufacture . . .
unpleasant aftertaste . . . readily accepted without coaxing.

**Superior stability**  Outstanding stabili
is achieved by Mead's specially developed solution. Poly-Vi-Sol and Tri-Vi-S
do not require refrigeration . . . no expiration dates on labels . . . they may
safely autoclaved with the formula.

**Superior convenience** Light, free-flowing . .
no mixing necessary . . . calibrated droppers assure easy, accurate dosage. F
infants, drop directly into the mouth. For children, measure into a spoon.

**Superior hypoallergenicity**  Poly-Vi-Sol® a
Tri-Vi-Sol® supply crystalline vitamins in a completely hypoallergenic solution

## Poly-Vi-Sol

Six essential vitamins for drop dosage

Each 0.6 cc. supplies:

| | |
|---|---|
| Vitamin A | 5000 units |
| Vitamin D | 1000 units |
| Ascorbic acid | 50 mg. |
| Thiamine | 1 mg. |
| Riboflavin | 0.8 mg. |
| Niacinamide | 6 mg. |

## Tri-Vi-Sol

Vitamins A, D and C for drop dosage

Each 0.6 cc. supplies:

| | |
|---|---|
| Vitamin A | 5000 units |
| Vitamin D | 1000 units |
| Ascorbic acid | 50 mg. |

*Available in 15 cc. and 50 cc. dropper bottles*

MEAD JOHNSON & COMPANY • EVANSVILLE, INDIANA, U. S. A.

MEAD